(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁷: A63F 13/00

(21) International Application Number: PCT/GB03/01785

(22) International Filing Date: 28 April 2003 (28.04.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0209752.5   29 April 2002 (29.04.2002)   GB

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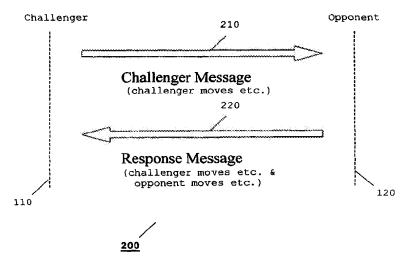
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(81) **Designated States** *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) **Designated States** *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:
— as to the identity of the inventor (Rule 4.17(i)) for the following designation US

(54) **Title:** REMOTE GAMING MECHANISM

(57) Abstract: A communication unit (110, 120) for playing a game with a second remote communication unit includes a receiver, for receiving a gaming message (210) that includes challenge data to initiate a contest with the second communication unit. The communication unit (110, 120) comprises a processor containing gaming software for extracting the challenge data from the gaming message. The processor processes response data relating to the challenge, either input by a user, or stored in a memory element of the communication unit, and determines an outcome of the contest based on the received challenge data and the response data. In this manner, a communication unit participating in a game, either as challenger or opponent, is enabled to determine the outcome of the contest based on receipt of a single gaming message, namely the received challenge data and any contest (opponent) data generated by a user or stored within the communication unit.

as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

REMOTE GAMING MECHANISM

Field of the Invention

5   The present invention relates to an apparatus, methods
and protocols for playing electronic games, over a
communication network. The invention is applicable to,
but not limited to, an apparatus, method and protocols
for remote gaming directly between two wireless
10   communication units over a wireless communication
network.

Background of the Invention

15   In the field of this invention, it is known that
mechanisms for playing electronic-based games exist,
whereby the games are played over a wireless or wireline
communication network between two or more remote
communication units. For example, remote gaming is known
20   whereby a plurality of players interact via a network,
for example a computer network such as the Internet, in
order to participate in playing a game. Increasingly
such games are being developed that make use of email and
similar messaging services for users/parties to
25   communicate over a network in order to play a game.

Battlemail.com provides one such game that is available
via the Internet. This game is described in
International Patent Application WO0167275. The patent
30   application describes a method for a first player,
hereinafter referred to as the challenger, sending a
message containing a challenge for a contest to a Server
on the Internet. The message is structured to include

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attack and defence moves. The Internet Server extracts
the challenge information, processes it and then
generates a further (second) challenge message. The
Internet Server sends this second challenge message to a
second player, hereinafter referred to as the opponent.

On receipt of the challenge message from the Server, the
opponent is able to accept the challenge, and send a
response message back to the server containing its own
attack and defence moves. On receipt of the response
message, the Internet Server extracts the response data.
With the challenge data extracted from the challenge
message from the challenger, together with the response
data extracted from the response message from the
opponent, the Internet Server is able to process both
sets of data to determine the outcome of the contest.
The Internet Server subsequently generates result
messages and sends one to each of the challenger and
opponent, informing them of the outcome of the contest.

The inventors of the present invention have recognised a
number of problems associated with such a remote gaming
method. First, the communication of challenge and
response messages over a communication network requires
the use of a dedicated server. Communication to and from
the dedicated Server utilises a number of communication
paths, thereby utilising valuable communication resource.

Another disadvantage of the method of gaming provided by
Battlemail.com is that of the results of contests being
determined by the server. If a large number of contests
take place at any one time, the server is required to
handle the various messages and determine the results of

the contests on its own. Particularly in a bandwidth
constrained communication network, such a processing
requirement placed on the Server could seriously slow
down the gaming experience for users. The effect of this
5   may be to dissuade players from playing the game in
future.

Furthermore, if the server is inoperable for any reason,
the players are prevented from playing the game. Again,
10 the effect of any downtime of the Internet site may be to
dissuade players from playing the game in future.

Computer networks are not the only networks over which
players can interact to play games. Communication
15 networks, and in particular wireless communication
networks such as GSM (Global System for Mobile
communication) networks, GPRS (General Packet Radio
System) networks and 3G (3rd Generation) networks, are
increasingly being explored as means for connecting
20 players of games. Such networks have a severe bandwidth
limitation. Additionally, a player may be charged for
each transmission (and perhaps reception) from the
wireless communication unit. Therefore, the inventors of
the present invention have recognised that a key issue
25 for playing games over such wireless networks is to keep
the number of messages between players to a minimum. In
this manner, the amount of bandwidth required to play the
game is reduced and the cost to the user is minimised.
Furthermore, the inventors have appreciated that certain
30 remote gaming users may prefer to communicate directly
between one another, thereby avoiding the potential
'down-time' inconvenience of a gaming web-site.

A need therefore exists for an improved remote gaming mechanism, together with associated communication units, protocols and message formats supporting the gaming mechanism, wherein the abovementioned disadvantages may
5   be alleviated.

Statement of Invention

In accordance with a first aspect of the present
10   invention, there is provided a communication unit for playing a game with a second remote communication unit, as claimed in Claim 1.

In accordance with a second aspect of the present
15   invention, there is provided a gaming server configured to operate as the second communication unit, as claimed in Claim 11.

In accordance with a third aspect of the present
20   invention, there is provided a wireless, computer-based or processor-based game, as claimed in Claim 12.

In accordance with a fourth aspect of the present invention, there is provided a communication protocol
25   supporting a remote gaming mechanism, as claimed in Claim 13.

In accordance with a fifth aspect of the present invention, there is provided a communication system, as
30   claimed in Claim 16.

In accordance with a sixth aspect of the present invention, there is provided a storage medium storing

processor-implementable instructions for controlling one
or more processors, as claimed in Claim 17.

Further aspects and advantageous features of the present
5   invention are as described in the appended Claims.

In summary, the present invention provides an improved
remote gaming mechanism. In particular, one or more
communication units participating in the game, either as
10 a challenger or opponent has been adapted to determine
the outcome of a contest. If the communication unit is a
challenging communication unit, the communication unit
may store, or receive back from the opponent, the
challenge data.
15

The communication unit may also receive response data
from an opponent. The communication unit is configured
to determine the outcome of the contest from the two sets
of data. If the communication unit is the opponent, the
20 communication unit stores the received challenge data
and, if the challenger is a similar remote communication
unit, preferably transmits the response data to the
challenger. Nevertheless, the communication unit is
configured to determine the outcome of the contest using
25 the received challenge data and any contest or response
data generated by a user of the communication unit or
stored within the communication unit.

Brief Description of the Drawings
30

Exemplary embodiments of the present invention will now
be described, by way of example only, with reference to
the accompanying drawings, in which:

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FIG. 1 illustrates a block diagram of a wireless
communication unit operating in a wireless communication
system, adapted to support the inventive concepts of the
5   preferred embodiments of the present invention;

FIG. 2 illustrates a message flow diagram between two
communication units operating in accordance with the
preferred embodiment of the present invention;

10

FIG. 3 illustrates a flowchart of a communication unit
sending a challenge message in accordance with the
preferred embodiment of the present invention;

15   FIG. 4 illustrates a flowchart of a communication unit
receiving a challenge message in accordance with the
preferred embodiment of the present invention;

FIG. 5 illustrates a flowchart of a communication unit
20   responding to a received challenge message in accordance
with the preferred embodiment of the present invention;

FIG. 6 illustrates a flowchart for determining an outcome
of a remote game facilitated in accordance with the
25   preferred embodiment of the present invention;

FIG. 7 illustrates a block diagram of a wireless
communication unit operating in a wireless communication
system, adapted to support the inventive concepts of an
30   alternative embodiment of the present invention;

FIG. 8 illustrates a message flow diagram between two
communication units and an intermediate gaming server in

accordance with an alternative embodiment of the present
invention;

5   FIG. 9 illustrates the known short message service (SMS)
message structure of the GSM communication system,
utilised in accordance with the preferred embodiment of
the present invention;

10   FIG. 10 illustrates the user data header of an SMS
message utilised in accordance with the preferred
embodiment of the present invention;

        FIG. 11 illustrates the information element of an SMS
message adapted to support the preferred embodiment of
15   the present invention;

        FIG. 12 illustrates the message data of an SMS message
adapted to support the preferred embodiment of the
present invention;

20
        FIG. 13 illustrates a format for the challenger and
opponent data applied to an SMS message to support the
preferred embodiment of the present invention;

25   FIG. 14 illustrates a character attribute format for the
challenger employed in accordance with the preferred
embodiment of the present invention; and

        FIG. 15 illustrates an attack/defence move data
30   arrangement employed in accordance with the preferred
embodiment of the present invention.

Description of Preferred Embodiments

The preferred embodiment of the present invention is
described with reference to a portable cellular phone
capable of transmitting messages, for example, SMS
5   messages over a current or future generation of wireless
cellular technology.   However, it is within the
contemplation of the present invention that the inventive
concepts described herein are equally applicable to any
other wireless or wireline communication unit, such as a
10   personal data assistant (PDA), a portable or mobile
radio, a laptop computer or a wirelessly networked
personal computer (PC) that is able to support remote
gaming.

15   FIG. 1 illustrates a block diagram 100 of a pair of
communication units 110, 120, operably coupled via a
communication network 130, and adapted to support the
inventive concepts of the present invention.   In the
illustrated embodiment, the pair of communication units -
20   first terminal 110 and second terminal 120 - are wireless
communication devices such as cellular mobile telephones,
and the network is a wireless communication network such
as a GSM network.

25   Each of the first and second terminals 110, 120 comprise
an antenna 135 and transceiver circuitry (not shown)
operably coupled to a processor 160.   The processor
includes communication software 140, to allow the
terminals 110, 120 to communicate with the network 130.
30   The processor 160 of each terminal 110, 120 further
comprises gaming software 140 to enable the processor to
provide the functionality necessary for the terminal to
participate in a remote game.   In addition, the processor

160 has been adapted to determine an outcome of a game;
based on a single received message that includes
challenge (or response) data, together with the selected
response (or challenge) data of that terminal.

It is within the contemplation of the invention that the
processor 160 is operably coupled to a memory element 170
of the terminal 110, 120 such that the processor 160 or
associated memory element 170 may be re-programmed with
data or an algorithm (such as that described with respect
to FIG. 3, FIG. 4, FIG. 5 or FIG. 6) supporting the
inventive concepts of the present invention, as described
below.

More generally, according to the preferred embodiment of
the present invention, such re-programming to effect an
improved remote gaming mechanism may be implemented in a
respective terminal in any suitable manner. For example,
a new memory chip or processor may be added to a
conventional cellular subscriber unit.

Alternatively, existing parts of a terminal 110, 120 may
be adapted, for example by reprogramming one or more
processors therein. The adaption may include (re-)
programming of the processor 160 to support the gaming
protocol or message structure as described with respect
to any of FIG. 10 to FIG. 15. As such, the required
adaptation may be implemented in the form of processor-
implementable instructions stored on a storage medium,
such as a floppy disk, hard disk, programmable ROM
(PROM), RAM or any combination of these or other storage
media.

Users of the terminals 110, 120 are able to interact/
communicate 125 with one another over the communication
network supported by, say, base station 130, in order to
play a game. In an alternative embodiment of the present

5   invention, it is envisaged that the terminals 110, 120
are able to interact/communicate 128 directly with one
another, for example over a bluetooth communication link,
a wireless local loop (WLL), a direct-mode or two-way
radio link, etc.

10

According to the present invention, this is achieved by
the user of the first terminal 110, hereinafter referred
to as the challenger, initiating a game. The challenger
initiates a game by selecting challenge parameters from a

15 list of options using the gaming software 150. Such an
initiation can be effected via the man machine interface
(MMI) 180, which preferably includes an output device
such as a display and an input device such as a keypad or
keyboard (not shown). The gaming software 150 passes

20 challenge parameters, together with optional opponent
details, to the communication software 140 of the
processor 160. The challenge parameters are used by the
processor 160 to create a challenge message. The
challenge message is then transmitted over the

25 communication network 130 to the second terminal 120.

The second terminal 120 receives the challenge message,
and the challenge (parameters) data and challenger
details are extracted from the message by the

30 communication software 140. The challenge parameters are
then passed to the gaming software 150. The user of the
second terminal 120, hereinafter referred to as the

opponent, is then able to accept or reject the challenge,
for example via the MMI 180.

On accepting the challenge, the opponent generates a
response. The gaming software 150 passes response data
together with challenger details to the communication
software 140. The processor 160, in co-operation with
the communication software 140 creates a response message
and transmits the response message over the network 130
to the first terminal 110.

Once the communication software 140 of the second
terminal 120 has transmitted the response message, or
once the gaming software 150 has passed the response data
and challenge data to the communication software 140, the
gaming software 150 of the second terminal 120 is able to
determine the outcome of the contest by itself. In this
regard, the gaming software processes the challenge data,
extracted from the challenge message, together with the
response data and implements (acts out) the contest in
order to determine the result.

The result of the contest is provided to the user, for
example displayed on a screen (say, the MMI display) of
the terminal 120. This may be achieved once the gaming
software 150 has completed processing the data and
determined the final result. Alternatively, and/or
additionally, as the data is being processed, the various
stages of the contest can be displayed to the user, for
example each attack move made by the players. This
feature is particularly advantageous over comparable
remote fighting games such as the Battlemail game, which
only shows the results - the contest having being

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resolved at a remote server, with only the result of the
contest being transmitted to the participants.

It is envisaged that the preferred option of displaying
various stages would be the default option.
Alternatively, it may be provided to the user via the MMI
180, and selectable via the processor 160. Furthermore,
it is envisaged that the user is provided with the
ability to interrupt a round-by-round account, in order
to simply skip to the end of the contest where the final
(determined) result may be displayed.

The communication network 130 communicates the response
message, transmitted by the communication software 140 of
the second terminal 120, to the first terminal 110. The
communication software 140 of the first terminal 110
receives the response message, and extracts the challenge
data and the response data therefrom. The challenge data
and response data are then passed to the gaming software
150 where, in the same manner as above for the second
terminal 120, the result of the contest may be determined
and displayed to the user.

Referring now to FIG. 2, there is illustrated the
preferred message flow, between the challenger terminal
110 and the opponent terminal 120, required in order for
a single game to take place. However, the inventors of
the present invention envisage that in alternative
embodiments the data to participate in multiple games
could be transmitted in a single (challenge or response)
message. In this regard, the data protocols and message
formats need to be configured to handle the increased
data content. As can be seen, in the preferred

embodiment of the present invention, only two messages
are required. Namely, a first, challenge message 210
from the challenger to the opponent and a second,
response message 220 from the opponent to the challenger.

5

The challenge message 210 comprises the challenge data,
which at least comprises the challenger moves, such as
attack moves and defence moves. In this manner, all
challenge data required by the opponent in order for a

10   contest to take place is provided in the initial
challenge message 210. This allows the gaming software
150 of the second terminal 120 to determine the result of
the contest, on its own account, without requiring
further data or information from the first terminal 110.

15

The response message 220 preferably comprises both the
challenge data and the response data. As for the
challenge message 210, the challenge data comprises at
least the challenger moves, such as attack moves and

20   defence moves. In the same manner, the response data
comprises at least the opponent moves, such as attack
moves and defence moves. In this manner, all challenge
data and all response data required to enable a contest
to take place are provided in the response message 220.

25   By providing all of the required opponent data in the
response message 220, the gaming software 150 of the
first terminal 110 is able to determine the result of the
contest.

30   Advantageously, by also providing all of the required
challenge data in the response message 220, it is not
necessary for the initial challenge data to be stored in
an area of memory in the first terminal 110, and

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subsequently retrieved on receipt of the corresponding
response message 220. This reduces the memory
requirement of (at least) the first terminal 110.

5   Furthermore, since there is a possibility that the
opponent may reject, i.e. not accept, a challenge, the
first terminal 110 will receive no response message.
Therefore, if challenge data is stored in an area of
memory of the first terminal 110, without a corresponding
10   response message 220 being received, the challenge data
stored in memory is wasted.

FIG. 3 illustrates a flowchart 300 of the process for
sending a challenge to an opponent. The process starts
15   by the user initiating the gaming software, as in step
305. For example, the user accesses an option in a menu
of a man machine interface (MMI) 180 of the first
terminal 110.

20   On initiating the game, user game profile information
that has been previously created, for example, during
previous games etc., is copied from an area of non-
volatile memory (NVM), as in step 310. The user game
profile information may be stored in an area of system
25   memory, such as random access memory (RAM).

In the preferred embodiment of the present invention, the
user game profile information may include, by way of
example, any one or combination of the following
30   information:
          (i) A user's gaming identity, or "alias".
          (ii) A character reference, relating to the user's
preferred character.

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(iii) Character attributes, such as strength, attack skill, defence skill, stamina/health etc, each of which may be improved through playing the game.

(iv) A user's credit or points, which may be
5   earned through playing the game.

(v) References to the character's equipment, including weapons, armour etc, which may be bought, improved or sold in exchange for credit.

10   In the Battlemail game, a player receives extra points that can be distributed among the attributes to improve them when the player has achieved a sufficiently high score. In contrast to the Battlemail game the preferred embodiment of the present invention awards credits in
15   contests, which can then be used to buy new equipment or pay for training to improve health, strength, attack skill or defence skill. The total number of credits earned (or points), whether spent or not, may also be used at the end of the contest as a way of gauging a
20   user's gaming experience. Namely, the player who has earned the most gold will be deemed the more experienced. The difference in experience between two players is then used to vary the amount of gold that can be earned in a contest, going in favour of the weaker player.

25

Once the user profile has been retrieved from memory, the user is able to initiate a challenge, as in step 315, by selecting a "challenge" option from a list of game options. The list of options may include one or more of
30   the following:

(i) "Challenge" - create and send a challenge to another player;

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(ii) "Messages" - view challenges and/or responses received;

(iii) "Profile" - view the user profile;

(iv) "Attributes" - change/improve character

5   attributes, for example following purchasing equipment, training etc;

(v) "Replay previous contests" - those contests that have been saved;

(vi) "Quit".

10

Once the user has initiated a challenge, by selecting the challenge option, character information is copied into a message buffer, as in step 320. The character information copied into the message buffer may include

15   the user's alias, the character reference, equipment references, character attributes, user's credit and/or user's points.

Next, the user is preferably provided with the option of

20   entering/selecting opponent details, as in step 325. For example, where the game is to be played between two cellular mobile telephones the user may enter the telephone number for the cellular mobile telephone of the opponent. Alternatively, the user may retrieve the

25   telephone number from a list of numbers stored in an area of memory of the telephone, such as a contacts list, address book, etc.

Once the user has entered/selected the opponent details,

30   these details are stored in system memory, as in step 330.

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Subsequently the user enters the desired moves, for example starting with the attack moves, as in step 335, which are preferably stored in the message buffer, as in step 340. The user may then enter the defence moves, as in step 345, which are also preferably stored in the message buffer, as in step 350.

Having entered/selected all required information, the user is then able to transmit a challenge, as in step 360 to a prospective opponent. This results in the challenge data being stored in a message buffer linked to the communication software 140, along with the opponent's details and any other required information, as in step 370. The communication software 140 receives the information and challenge data, and creates the challenge message. The communication unit then transmits the challenge message to the opponent, via the communication network 130, as in step 380.

As previously mentioned, there is no need for the challenge data sent in the challenge message to be retained, since if the opponent accepts the challenge, it is envisaged that the challenge data will be provided in the response message. Therefore, the challenge data can subsequently be discarded, once the challenge message has been sent.

However, if memory space in the communication unit is not a scarce resource, it is envisaged that the challenge data may be retained in a memory element of the first terminal. In this manner, the response from the opponent may be simplified by only including the response data and not replicating the challenge data. Furthermore, in this

scenario, it is envisaged that the challenge data may be
deleted from the memory after a time period, if no
response has been received.

5   Referring now to FIG. 4 and FIG. 5, flowcharts 400, 500
illustrate the processes involved when a challenge
message, or a response message, is received. The
processes start when a game message, whether a challenge
message or a response message, is received in step 410 in
10   the flowchart of FIG. 4. The message is received by the
communication software, which extracts the challenge/
response data and the challenger/ opponent details. The
details are preferably stored in NVM, as in step 420.
The user is then informed of the receipt of the message,
15   as in step 430.

If the user has not already initiated the gaming
software, this is performed, as shown in step 440. The
user profile is retrieved from NVM and stored in system
20   memory, as in step 450.

The user selects, for example from the list of options
described above, to view any received game messages, as
in step 460. Sender details and message type for each
25   game message stored in NVM may be retrieved and displayed
to the user, as in step 470. The user then selects one
of the game messages, as in step 480. The type of
message selected in step 490, i.e. challenge or response,
determines the next course of action.

30

It can be seen that if the message selected by the user
in step 480 is a response message, the challenge data and
response data provided by the response message are

retrieved from NVM and stored in memory, as in step 495.
The gaming software then uses the challenge data and
response data to determine the outcome of the contest.

5   FIG. 5 illustrates the steps taken when the message
selected by the user is a challenge message. The user is
provided with the option of accepting or declining the
challenge, as in step 505. If the user declines the
challenge, the challenge data and associated information
10   are deleted from both the system memory and NVM. Since
the terminal of the challenger does not retain the
challenge data in the preferred embodiment, there is no
requirement for a message to be sent to the challenger
informing the challenger, or his/her terminal, that the
15   challenge has been declined.

If the user accepts the challenge, the challenge data is
retrieved from NVM, and stored in a message buffer, and
the challenger's details are stored in the system memory,
20   as in step 515. Next, the user's character information
is copied from system memory into the message buffer, as
in step 520.

In the same manner as for steps 335 to 360, when
25   generating a challenge message, the subsequent steps 525
to 545 when generating a response message include the
user (opponent) entering attack and defence moves. These
moves are stored in the message buffer, and the opponent
transmits the response to the challenger.

30

The data stored in the message buffer, comprising both
the challenge data and the response data, together with
the challenger's details, are passed to the communication

software, as in step 550. The communication software
uses the data to create the response message. The
message is then sent to the challenger, via the
communication network 130, as shown in step 555.

Once the response message has been sent, or once the data
has been passed to the communication software to send,
the gaming software uses the challenge data and response
data, still located in the message buffer, to determine
the outcome of the contest.

FIG. 6 illustrates an example of how the result of a
contest is determined by the communication unit. The
initial requirement is for the game variables to be set,
as in step 605. In the illustrated embodiment these are:

        (i) "Round", this provides a counter for the
rounds in the contest;

        (ii) "ChlHP", which represents the health points
for the challenger; and

        (iii) "OppHP", which represents the health points
for the challenger.

Additional/ alternative variables may be, for example,
variables representing:

        (iv) The strength of the challenger and opponent.

        (v) The attack and defence skills of the
challenger and opponent.

        (vi) The damage characteristics of the weapons of
the challenger and opponent.

        (vii) The defensive characteristics of the armour
and/or shield of the challenger and opponent.

        (viii) The stamina or health characteristics of
the challenger and opponent.

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The following descriptions clarify a preferred example of
some of the aforementioned variables.

5   Character strength: A player starts with a default
strength value. Strength can be improved, i.e.
increased, by buying appropriate training. In the
preferred embodiment of the present invention, the effect
of strength relates to the user's armour. If the armour
10   is too heavy for the user, damage inflicted by the user
when attacking is reduced (due to the armour inhibiting
the user).

Attack and defence skills: A player starts with a default
15   attack skill value and a default defence skill value.
These can both be improved by buying appropriate
training. These skills affect the amount of
health/stamina a player loses when attacked (i.e. the
greater the attack skill the more health is lost, the
20   greater the defence skill the less health is lost).

Damage characteristics of weapon: The weapon damage value
depends upon the weapon the user has it his/her disposal.
The user can buy different weapons. The weapon damage
25   value is used:
        a) When an opponent defends (noting that if the
opponent's shield value is less than the weapon damage
value the difference is used to determine the health lost
by the opponent); and
30   b) When the opponent does not defend again to
determine the health lost by the opponent.

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Defensive characteristics: This depends on the armour of
the player. In the preferred embodiment, the armour
consists of a helmet, a breastplate and boots, each
having individual defensive points for high, mid and low
5   armour. If the player is defending, armour is not used
if the shield is defined as being stronger than the
opponent's weapon. However, if the shield is weaker than
the weapon, or the player fails to defend, the stronger
the armour the less health is lost.
10

Health/stamina: The player starts with a default health
value. Health/stamina can be improved by buying
appropriate training. The more health points the player
has, the longer the player can last, since more health
15 points need to be lost before the player is
incapacitated, etc.

The variable "Round" is initially set to a '1',
indicating the first round. "ChlHP" and "OppHP" are
20 initially set to '3' each, providing each character with
an initial health value.

Next, the first round begins with the challenger's first
attack (being the first round) move (ChlAtt(Round)) being
25 compared to the opponent's first defence move
(OppDef(Round)), as in step 610. If the challenger's
attack move is equal to the opponent's defence move, the
opponent effectively defends the attack.

30 Where the opponent fails to defend an attack from the
challenger, a point is deducted from the opponent's
health "OppHP", as in step 615. If the opponent's health
is equal to '0', as in step 620, the opponent has been

knocked out. At this juncture the contest, or bout, is over, as shown in step 625. Otherwise, the process moves on to the next part of the round where the opponent attacks, as in step 630. After the opponent has defended

5   or attempted to defend the challenger's attack, the process moves on to the next part of the round where the opponent attacks the challenger, as in step 625.

In alternative embodiments, other factors may affect the

10 amount by which the health of the opponent is reduced. It is envisaged that such factors may include one or a combination of:

(i) The strength of the challenger and opponent.

(ii) The attack and defence skills of the

15 challenger and opponent.

(iii) The damage characteristics of the weapons of the challenger and opponent.

(iv) The defensive characteristics of the armour and/or shield of the challenger and opponent.

20   (v) The stamina or health characteristics of the challenger and opponent.

In step 630, if the opponent's first attack move (OppAtt(Round)) is equal to the challenger's first

25 defence move (ChlDef(Round)) the challenger effectively defends the attack.

When the challenger defends the attack, the process moves to the end of the round, as in step 650. However, where

30 the challenger fails to defend the attack, a point is deducted from the challenger's health "ChlHP", as in step 635. If the opponent's health is then equal to '0', in step 640, the opponent has been knocked out, and the

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contest, or bout, is over, as in step 645. Otherwise, the process moves on to the next round with the challenger attacking in step 610.

5   Again, it is envisaged that other factors may affect the amount by which the health of the opponent is reduced, for example the type of weapons used, the training purchased, etc.

10   At the end of the round, the "Round" variable is incremented by '1', as in step 650. If the "Round" variable has a value greater than '5', then five rounds have taken place, and the contest is over. However, where the "Round" value does not have a value greater
15   than '5', i.e. less than five rounds have been played, the process returns to the beginning of the next round, as in step 610.

It will be appreciated that the number of rounds to be
20   played is illustrated as being '5'. This may be set to any appropriate value, and may be determined by the challenger and/or the opponent.

The outcome of the contest preferably also determines how
25   the user's character attributes, etc. are affected. For example, the user may earn points and/or credit for winning a contest or for the amount of health deducted from the other player, etc.

30   At the end of the contest, the result is provided to the user, for example displayed on a screen of the terminal, along with any changes to the player's attributes etc. Preferably, the contest is also displayed in a graphical

form, for example the characters of the players being
shown attacking and defending. This may be displayed
once the overall outcome of the contest has been
determined. Alternatively, as each round or

5   attack/defence move is evaluated, that round or
attack/defence move is displayed graphically to the user.
The user is preferably able to select the mode of
operation via the MMI.

10   In a preferred embodiment of the present invention, a
user is also able to save the contest in NVM, in order to
enable the user to replay the contest at a later stage.
This may be in the form of a graphical representation of
the contest, or alternatively in the form of the

15   challenge and response data.

In order to reduce the amount of data that is required to
be included in the challenge and response messages,
preferably attributes such as the user's character, the

20   weapons, armour etc, are each determined using references
to a table of attributes. For example, for the user's
character, the user is able to select a character from a
selection. Each terminal has an identical, or at least
similar, selection of characters, the graphical

25   representations for which are stored in NVM. Each
character has a character reference that is used to
obtain the graphical representation of the character from
a lookup table area in memory.

30   Thus, it is not necessary to include in the challenge
and/or response message data providing the graphical
representation of the character, only the character

reference, which can be used to locate the graphical
representation(s) from the NVM of the terminal.

This is particularly advantageous when playing the game
5   via, for example, GSM networks utilising SMS messages for
transmitting and receiving the game messages, since only
a single SMS message is required for transmitting the
challenge data and the response data, and the amount of
data should be kept to a minimum.
10

Referring now to FIG. 7 and FIG. 8, a yet further
embodiment of the present invention is described. In
this further embodiment, it is envisaged that the gaming
messages may be routed via, or initiated from, a Central
15 Gaming Server 710. It is envisaged that the Central
Gaming Server 710 may be operably coupled to any
intermediate communication unit, such as a GSM base
station 130, or operating as a stand-alone unit.

20 In the context of the Central Gaming Server 710 routing
challenges/responses, it is possible for a player to send
challenges to other players without having to know
necessarily the details of the other players.
Advantageously, a challenger may initiate a contest with
25 unknown users who, for example, have expressed/registered
an interest with the Central Gaming Server 710 to
participate in such contests.

In the context of the Central Gaming Server 710
30 initiating a contest, it is envisaged that the Server 710
may transmit challenge messages to communication units
periodically or intermittently. Again, in this regard,
it is envisaged that users may have registered an

interest in a particular game, supported by the Central
Gaming Server 710. It is also envisaged that an operator
may impose a charge for such centrally initiated and
transmitted challenges.

5

The Central Gaming Server 710 transmits a challenge to
any remote communication units 110, 120 that are capable
of accepting such a challenge. Any remote communication
unit 110, 120 that accepts the challenge, may determine

10 the outcome of the contest based on the received
challenge. The remote communication unit 110, 120 uses
the challenge details, together with any input response
from the user, say via MMI 180, or any response stored in
memory 170. Notably, as there is no need to transmit a

15 response to the Central Gaming Server 710, the contest
only requires the transmission of a single challenge
message.

Referring now to FIG. 8, a message flow diagram between

20 two communication units and an intermediate (central)
Gaming Server 710 is illustrated, in accordance with an
alternative embodiment of the present invention. The
preferred message flow is from the challenger terminal
110, via the Gaming Server 710, to the opponent terminal

25 120. As can be seen, when the Gaming Server 710 performs
a routing operation only two messages 210, 220 are
required. Namely, a first, challenge message 210 from
the challenger via the Gaming Server 710 to the opponent
and a second, response message 220 from the opponent via

30 the Gaming Server 710 back to the challenger. In this
manner, the Gaming Server 710 may extract an identity of
the intended opponent from the challenge message and
forward the challenge to the opponent.

Notably, in this alternative, when the Gaming Server
initiates a challenge, the Gaming Server 710 takes the
place of the challenger. In this context, the Gaming

5   Server generates and only transmits the challenger
message 210. No response message 220 is required back
from the opponent 120.

Message Protocol

10

The preferred message protocol, for performing the remote
gaming mechanism described above, utilises the short
message service (SMS) used by wireless communications
devices, such as mobile phones, that are compliant with

15   the Global System for Mobile Communications (GSM)
recommendations.

However, it will be appreciated that the message protocol
of the present invention may equally be implemented in

20   other messaging formats. One example of alternative
message protocols could be electronic mail messaging used
for computer networks such as the Internet.

SMS point-to-point messaging is defined in the

25   recommendation GSM 03.40, with the basic structure of an
SMS message at the Short Message Transfer layer being
illustrated in FIG. 9. The SMS message is divided into
octets, highlighted as rows for clarity purposes only,
where each octet comprises eight bits numbered '0' to

30   '7'.

As can be seen, the last section of the SMS message is
used for Transfer Protocol User Data (TP-UD). This

section can be up to one hundred and forty octets in
length. The Transfer Protocol-User Data Header
Identifier (TP-UDHI) field in the first octet of the
message is used to indicate when a user data header is

5   present in the user data section. In accordance with the
present invention, the TP-UDHI field is set to a binary
value of '1', indicating the presence of a user data
header.

10   The user data header is located at the beginning of the
user data section, and is illustrated in FIG. 10. As
illustrated, the first octet of the user data header (and
therefore of the user data section) provides the overall
length of the user data header, which for the illustrated

15   embodiment is '12' (octets), excluding itself.

The second octet of the user data header is used for the
'Information Element Identification' (IEI), which
identifies the type of message, for example a

20   concatenated short message, 8-bit reference number,
special SMS message indication etc. For the present
invention, the IEI preferably has a value of '0x9F',
identifying the message as "SME to SME specific use".

25   The third octet in the user data header provides the
length of the information element, which for the
illustrated embodiment is '10' (octets), excluding
itself. The last ten octets of the user data header
comprise the "Information element", which contains the

30   actual header information.

Referring to FIG. 11, the contents of the ten octets of
the information element are illustrated in more detail.

For the present invention, the first five octets are used
to identify the message as being of a specific set of
messages. In the illustrated embodiment, the five octets
(octets 3 to 7 of the user data header) contain, in
order, the ASCII values "S", "E", "N", "D", and "O",
which identify the messages as being a part of a set of
"Sendo™" messages.

The next octet contains a message identifier, which for
the illustrated embodiment is a gaming message
identifier. This identifies the message as being related
to a game. The following octet ('9' of the user data
header) contains a game message type identifier, which
identifies the purpose of the game message. For the
illustrated embodiment, this identifies the purpose of
the game message as being an interactive gaming message
(as opposed to a game download message for downloading a
new game or a game update message for updating a game
etc.).

The next octet identifies the game subset ID, for example
to identify whether a game runs on a proprietary virtual
machine, a Java virtual machine or in its own
application.

The penultimate octet is used for the unique game ID,
which identifies the game with which the message is to be
associated. Finally, the last octet of the information
element is reserved for further identities.
Alternatively, the last octet may be used to increase the
size of the unique game ID to two octets.

Following the user data header, starting at octet '13' of
the user data section of the message, is the message
data. This is illustrated in FIG. 12. Octet '13'
contains a value representing the message type. For the
5   illustrated embodiment, there are at least two message
types, namely "Challenge" or "Response". The next three
octets, namely '14' to '16', provide further game data,
such as the version of the particular game, etc. Octets
'17' to '74' are used for the Challenger data, and
10 finally octets '75' to '132' are used for the Opponent
data, as shown.

FIG. 13 illustrates the preferred format for the
challenger and opponent data. The first four octets are
15 used for a unique user ID. This allows challenges and
responses to be associated with one another.

The next twenty-eight octets ('21' to ''48') contain an
alphanumeric string providing a player "alias". Unicode
20 2.0 is preferably used to represent the string in binary.
Unicode is a universal character-encoding standard for
representation of text for computer processing, developed
by the Unicode Consortium™.

25 The next ten octets ('49' to ''58') provide the character
attributes, as illustrated in more detail in FIG. 14 for
the Challenger. The first octet for the character
attributes provides an index reference for the character
of the challenger or opponent. This reference is used to
30 locate the graphical representations etc. of the
character from a table held in an area of memory of the
mobile phone, or other device, to which the message is
sent.

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The next four octets ('50' to '53') for the character
attributes provide integer values for health points,
strength, combat/attack skill and defence levels
5   respectively. The final five octets ('54' to '58') of
the character attributes provide index references for
weapon, shield, helmet, breastplate and boots
respectively.

10 Referring back to FIG. 13, the five octets ('59' to '63')
following the character attributes provide the attack and
defence moves of the challenger/opponent. These are
illustrated in more detail in FIG. 15, wherein it can be
seen that each octet is divided into two parts, one part
15 providing an attack move and the second part providing a
defence move. In this way five attack moves and five
defence moves can be provided using five octets.

Referring back to FIG. 13 once again, following the
20 attack and defence moves, the next four octets ('64' to
'67') provide an integer value representing the player
score of the challenger/opponent. The subsequent four
octets ('68' to '71') provide an integer value for the
player credit of the challenger/opponent.
25
Finally, the last three octets ('72' to '74') are used
for spacing, padding out the challenger/opponent data
such that it takes up a number of octets ('17' to '132')
divisible by four (i.e. 116). One reason for having the
30 number of octets divisible by four is to provide a 32
boundary (4*8 octets) to provide for 'Double Word
alignment' as required by compilers.

It is within the contemplation of the invention that the inventive concepts hereinbefore described are not limited to the particular game of the preferred embodiment. Indeed, it is envisaged that the concepts are applicable

5 to any game format where moves can be pre-determined, or a player enters a set of moves, that are not dependent upon knowledge of an opponent's response, such as 'chess'. One example of a game that can be implemented would be a penalty shootout type football game, where the

10 moves are shoot and save, instead of attack and defend.

The preferred embodiment of the present invention has been described with reference to a wireless environment with a processor-based game residing in a wireless

15 communication unit. However, it is within the contemplation of the invention that the inventive concepts are equally applicable to a wire-line computer-based environment.

20 It will be understood that the improved remote gaming mechanism, together with associated communication units, protocols and message formats supporting the gaming mechanism, as described above, provides at least the following advantages:

25   (i) Remote gaming is provided directly between two terminals, without the need for a gaming server. This is primarily achieved due to the provision of fewer messages together with the results of contests being determined by each terminal.

30   (ii) As each game message contains all gaming data, it is not necessary for the terminals to retain gaming data.

(iii) The use of standard attributes, such as
character, weapons, armour etc, means that only
references need be transmitted between terminals, rather
than full graphical representations and characteristics
5   for those attributes, significantly reducing the amount
of data required to be transmitted.

Whilst the specific and preferred implementations of the
embodiments of the present invention are described above,
10   it is clear that one skilled in the art could readily
apply variations and modifications of such inventive
concepts.

Thus, an improved remote gaming mechanism, together with
15   associated communication units, protocols and message
formats supporting the gaming mechanism, has been
described where the aforementioned disadvantages with
prior art arrangements have been substantially
alleviated.

Claims

1.   A communication unit (110, 120) for playing a game
with a second remote communication unit, the
communication unit comprising:
        a receiver, for receiving a gaming message (210)
from the second communication unit where the message
includes challenge data to initiate a contest with the
second remote communication unit;
        a processor (160), operably coupled to the
receiver, containing software for extracting said
challenge data from the gaming message;
the communication unit characterised in that:
        the processor processes response data relating to
the challenge, either input by a user of the
communication unit or stored in a memory element of the
communication unit, and determines an outcome of the
contest based on said received challenge data and said
response data.

2.   The communication unit (110, 120) according to
Claim 1, wherein said processor (160) generates a
response message from said response data, the
communication unit further characterised by:
        a transmitter, for transmitting a response message
to the second communication unit, wherein the response
message includes opponent data for the communication unit
to participate in said contest.

3.   The communication unit (110, 120) according to
Claim 2, the communication unit further characterised by
the response message further comprising the extracted
challenge data.

4.   The communication unit according to Claim 2 or
Claim 3, the communication unit further characterised by
the response message and or challenge message further
5   comprising details of the challenger and/or opponent.

5.   The communication unit (110, 120) according to
Claim 1, wherein the communication unit is a wireless
communication unit, operating over a wireless
10   communication network.

6.   The communication unit (110, 120) according to
Claim 1, wherein the processor (160) is configured to
enact the game substantially in accordance with the
15   process described in FIG. 6.

7.   The communication unit (110, 120) according to
Claim 1, wherein the processor (160) is operably coupled
to a display to display to a user of the communication
20   unit a list of options to play a game, wherein said
options include one or more of the following:
        (i) "Challenge" – create and send a challenge to
another player;
        (ii) "Messages" – view challenges and/or responses
25   received;
        (iii) "Profile" – view the user profile;
        (iv) "Attributes" – change/improve character
attributes, for example purchasing equipment, training
etc;
30   (v) "Replay previous contests" – those contests
that have been saved; and
        (vi) "Quit".

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8.   The communication unit (110, 120) according to
Claim 1, wherein the communication unit is one of: a
cellular phone, a personal data assistant (PDA), a
portable or mobile radio, a laptop computer or a
5   wirelessly networked personal computer (PC) that is able
to support remote gaming.

9.   The communication unit (110, 120) according to
Claim 1, wherein the second communication unit is a
10   gaming server (710) configured to
        (i) Initiate challenges to one or more remote
communication units (110, 120), or
        (ii) Route challenges between two or more remote
communication units.
15

10.   The communication unit (110, 120) according to
Claim 9, wherein the gaming server (710) is configured to
initiate challenges to one or more remote communication
units periodically or intermittently.
20

11.   A gaming server (710) configured to operate as the
second communication unit in accordance with Claim 1.

12.   A wireless, computer-based or processor-based game
25   adapted to operate in the communication unit of Claim 1.

13.   A communication protocol employed by a
communication unit according to Claim 1, wherein the
communication protocol supports a remote gaming mechanism
30   between two communication units.

14.   The communication protocol according to Claim 13,
wherein at least one message of the protocol includes

both challenger and opponent data, to effect an outcome
of the contest in either or both of the communication
units.

5   15.   The communication protocol according to Claim 13
or Claim 14, wherein a message of the protocol includes
at least one attack move and at least one defence move
relating to challenger or opponent data.

10 16.   A communication system (100) adapted to facilitate
communication (125, 128) between two communication units
at least one of which is adapted according to Claim 1 or
support the communication protocol according to Claim 13.

15 17.   A storage medium storing processor-implementable
instructions for controlling one or more processors in
the communication unit of Claim 1.

FIG. 1

Challenger   210   Opponent

Challenger Message
(challenger moves etc.)

220

Response Message
(challenger moves etc. &
opponent moves etc.)

110   120

FIG. 2

200

FIG. 3

300

305 — User initiates gaming software

310 — User game profile copied from NVM and stored in system memory

315 — User initiates a challenge

320 — User's character information copied from system memory and stored in message buffer

325 — User enters/selects opponent details

330 — Opponent's details stored in system memory

335 — User enters/selects attack moves

340 — Attack moves stored in message buffer

345 — User enters/selects defence moves

350 — Defence moves stored in message buffer

360 — User initiates sending of challenge

370 — Data stored in message buffer provided to communication software, along with opponent's details and all other required information, where message generated

380 — Challenge message sent

```
                                                     410
              ╭─────────────────────────────╮ ╱
              │   Game message received      │╱
              ╰─────────────────────────────╯
                            │                        420
                            ▼                       ╱
        ┌───────────────────────────────────────────┐╱
        │ Communication software extracts game data │
        │ and sender details from the message, which│
        │ are then stored in NVM                     │
        └───────────────────────────────────────────┘
                            │                    430
                            ▼                   ╱
            ┌──────────────────────────────────┐╱
            │ User informed of receipt of Game │
            │ message                          │
            └──────────────────────────────────┘
                            │                440
                            ▼               ╱
   400      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐╱
            │  User initiates game software │
            └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                            │                450
                            ▼               ╱
            ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐╱
            │ User game profile retrieved   │
            │ from NVM and stored in system │
            │ memory                        │
            └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                            │                460
                            ▼               ╱
            ┌──────────────────────────────┐╱
            │ User chooses to view         │
            │ challenge/ response messages │
            │ received                     │
            └──────────────────────────────┘
                            │                470
                            ▼               ╱
        ┌──────────────────────────────────────┐╱
        │ Sender details and message type (i.e. │
        │ challenge or response), for each      │
        │ message received and yet to be        │
        │ accepted/declined, retrieved from NVM │
        │ and displayed to user                 │
        └──────────────────────────────────────┘
                            │                480
                            ▼               ╱
            ┌──────────────────────────────┐╱
            │    User selects a message    │
            └──────────────────────────────┘
                            │                490
                            ▼               ╱
   Challenge           ╱─────────╲      Response
   ◄────────────────  Message type  ──────────────►
                      │ is challenge│
                      │ or response?│
                       ╲─────────╱
         │                                    │
         ▼                                    ▼           495
       ╭───╮       ╭───╮        ┌──────────────────────┐╱
       │ A │       │ C │◄───────│ Response information │
       ╰───╯       ╰───╯        │ retrieved from NVM   │
                                │ and stored system    │
                                │ memory               │
                                └──────────────────────┘
```

FIG. 4

(A)

510

Challenge
information
deleted
from NVM

Decline

505   **500**

User accepts or
declines challenge?

Accept   515

Challenge information retrieved from NVM and
stored in message buffer and Challenger's
details retrieved and stored in system memory

520

User's character information copied from
system memory and stored in message buffer

525

User enters/selects attack moves

530

Attack moves stored in message buffer

535

User enters/selects defence moves

540

Defence moves stored in message buffer

545

User sends response

550

Data stored in message buffer copied to communication
software, along with Challenger's details and all other
required information, where message generated

555

Response message sent

FIG. 5

(C)

C → Round = "1"
    ChlHP = "3"
    OppHP = "3"

605

610

600

ChlAtt(Round) = OppDef(Round)? — Yes →

No
↓

615

OppHP - 1

620

625   Yes

OppHP = 0? — No

End bout

630

OppAtt(Round) = ChlDef(Round)? — Yes →

No
↓

635

ChlHP - 1

640

645   Yes

ChlHP = 0? — No

End bout

650

Round + 1

655

Round > 5? — No

FIG. 6

Yes
↓

660

End bout

FIG. 7

Challenger   210   Gaming   210 Opponent
                                      Server

Challenger Message   Challenger Message
   (challenger moves   (challenger moves
        etc.)   220   etc.)   220

Opponent Message   Opponent Message
(challenger moves etc.   (challenger moves etc.
& opponent moves etc.)   & opponent moves etc.)
110   120

                                      710

         800

                              FIG. 8

FIG. 9

Octet	Description
0	Length of User Data Header
1	Information Element Identification
2	Length of Information Element
3 - 12	Information Element

FIG. 10

Octet Number	Value	Description
3	'S'	Generic identifier for Sendo data SMS message
4	'E'	Generic identifier for Sendo data SMS message
5	'N'	Generic identifier for Sendo data SMS message
6	'D'	Generic identifier for Sendo data SMS message
7	'O'	Generic identifier for Sendo data SMS message
8	xxxxxxxx	Game message identifier
9	xxxxxxxx	Game message type
10	xxxxxxxx	Game subset ID
11	xxxxxxxx	Unique game ID
12	xxxxxxxx	Further identifiers

FIG. 11

Octet Number	Value	Description
13	xxxxxxxx	Message type
14-16	xxxxxxxx	Further game data
17-74	xxxxxxxx	Challenger data
75-132	xxxxxxxx	Opponent data

FIG. 12

Challenger Octets	Opponent Octets	Description
17 - 20	75 - 78	Unique game ID
21 - 48	79 - 106	Player alias
49 - 58	107 - 116	Character attributes

59 – 63	117 – 121	Attack move/defend move
64 – 67	122 – 125	Player score
68 – 71	126 – 129	Player credit
72 – 74	130 – 132	Spacing

FIG. 13

Octets	Description
49	Character index reference
50	Health Points
51	Strength
52	Combat/attack skill level
53	Defence skill level
54	Weapon index reference
55	Shield index reference
56	Helmet index reference
57	Breastplate index reference
58	Boots index reference

FIG. 14

Octets	Bit Description							
59	Att	Att	Att	Att	Def	Def	Def	Def
60	Att	Att	Att	Att	Def	Def	Def	Def
61	Att	Att	Att	Att	Def	Def	Def	Def
62	Att	Att	Att	Att	Def	Def	Def	Def
63	Att	Att	Att	Att	Def	Def	Def	Def

FIG. 15